
Flk2⁺ common lymphoid progenitors possess equivalent differentiation potential for the B and T lineages.

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Public Summary:

Scientific Abstract:

Mature blood cells develop from multipotent hematopoietic stem cells through a series of sequential intermediates in which the developmental potential for particular blood lineages is progressively extinguished. We previously reported the identification of one of these developmental intermediates, the common lymphoid progenitor (CLP), which can give rise to T cells, B cells, dendritic cells (DCs), and natural killer cells (NKs), but lacks myeloid and erythroid potential. Recently, several studies have suggested that the T-cell and DC potential of CLP is limited or absent, and/or that CLP contains significant myeloid potential. Here, we show that the originally identified CLP population can be divided into functionally distinct subsets based on the expression of the tyrosine kinase receptor, Flk2. The Flk2(+) subset contains robust in vivo and in vitro T-cell, B-cell, DC, and NK potential, but lacks myeloid potential and, therefore, represents an oligopotent, lymphoid-restricted progenitor. This population of cells does not appear to be B cell-biased and robustly reconstitutes both B and T lineages in vivo, consistent with its being a physiologic progenitor of both of these subsets. Thus, Flk2 expression defines a homogeneous, readily obtainable subset of bone marrow CLP that is completely lymphoid-committed and can differentiate equivalently well into both B and T lineages.

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